

What Is Claimed Is:

1. An inflatable cushion cell comprising:

first and second inflatable compartments defined at least in part by at least one diagonal seal structure;

wherein each compartment includes at least one fluid opening.
2. The inflatable cushion cell of claim 1 wherein each compartment is further defined by first and second external side walls and wherein the diagonal seal structure connects the first and second external side walls to form fluid barrier between the first and second inflatable compartments.
3. The inflatable cushion cell of claim 1 wherein the first and second inflatable compartments each have at least one base surface and at least one leg surface located opposite the diagonal seal structure.
4. The inflatable cushion cell of claim 3 wherein a seal is formed along at least one of: the base surface and the leg surface.
5. The inflatable cushion cell of claim 1 further comprising a restriction member located away from the diagonal seal structure wherein the restriction member is formed to restrict the expansion of the first and second inflatable compartments.
6. The inflatable cushion cell of claim 5 wherein the restriction member includes at least a first and second restriction member each located in each of the first and second inflatable compartments.

7. The inflatable cushion cell of claim 3 wherein the base of the first inflatable compartment contains low air loss holes that allow the contents of the first inflatable compartment to escape.

8. The inflatable cushion cell of claim 3 wherein the base of the second inflatable compartment contains low air loss holes that allow the contents of the first inflatable compartment to escape.

9. An inflatable cushion cell comprising:

first and second inflatable compartments defined by at least one diagonal seal structure, wherein each compartment includes at least one fluid opening, wherein the first and second inflatable compartments each have at least one base surface and at least one leg surface located opposite the diagonal seal structure, and wherein a seal is formed along at least one of: the base surface and the leg surface; and

a restriction member located away from the diagonal seal structure wherein the restriction member is formed as a seam to restrict the expansion of the first and second inflatable compartments.

10. The inflatable cushion cell of claim 9 wherein the restriction member includes at least a first and second restriction member each located in each of the first and second inflatable compartments.

11. An inflatable cushion cell defined by offset four corners comprising:

first and second inflatable compartments defined by at least one diagonal seal structure, wherein each compartment includes at least one fluid opening;

wherein the diagonal seal structure is offset from opposite corners of the cell.

12. The inflatable cushion cell of claim 11 wherein the intersection of the diagonal seal structure with a first vertical side of the inflation cushion cell define a first inflatable compartment first leg and a first inflatable compartment second leg, and wherein the intersection of the diagonal seal structure with a second vertical side of the inflation cushion cell define a second inflatable compartment first leg and a second inflatable compartment second leg.

13. An inflatable patient support system comprising:

a frame for securing inflatable cushion cells; and

a plurality of inflatable cushion cells located within the frame;

wherein at least one of the plurality of inflatable cushion cells includes first and second inflatable compartments defined at least in part by at least one diagonal seal structure, and wherein each compartment includes at least one fluid opening.

14. The inflatable patient support system of claim 13 wherein at least two first inflatable compartments from at least two of the plurality of inflatable cushion cells are in fluid communication with one another, and wherein at least two second inflatable compartments from at least two of the plurality of inflatable cushion cells are in fluid communication with one another.

15. The inflatable patient support system of claim 13 wherein the frame is inflatable.

16. The inflatable patient support system of claim 13 wherein the first and second inflatable compartments of the at least one of the plurality of inflatable cushion cells each include at least

one base surface located opposite the corresponding diagonal seal structure, wherein the at least one base surface of the first inflatable compartment is located above the at least one base surface of the second inflatable compartment, and wherein the at least one base surface of the first inflatable compartment is substantially horizontal when both the first and second inflatable compartments are at a high pressure, wherein the at least one base surface of the first inflatable compartment slopes in a first direction when the first inflatable compartment is at a low pressure and the second inflatable compartment is at a high pressure, and wherein the at least one base surface of the first inflatable compartment slopes in a second direction when the first inflatable compartment is at a high pressure and the second inflatable compartment is at a low pressure.

17. A pressure control system for a first inflatable cushion cell having a first cell first inflatable compartment and a first cell second inflatable compartment, comprising:

- a user interface device for selecting desired pressures for the first cell first inflatable compartment and the first cell second inflatable compartment;

- a fluid pump for increasing or decreasing the pressures in the first cell first inflatable compartment and the first cell second inflatable compartment;

- a valve assembly for selectively providing fluid communication to the first cell first inflatable compartment and the first cell second inflatable compartment; and

- a controller for controlling the operation of the fluid pump and the valve assembly based on input from the user interface device;

wherein the first cell first inflatable compartment and the first cell second inflatable compartment are defined at least in part by at least one diagonal seal structure, and wherein each

of the first cell first inflatable compartment and the first cell second inflatable compartment include at least one fluid opening.

18. The pressure control system of claim 17 further comprising pressure sensors for detecting pressures of the first cell first inflatable compartment and the first cell second inflatable compartment.

19. The pressure control system of claim 17 wherein the controller is operative to power on the fluid pump intermittently.

20. The pressure control system of claim 17 further comprising a second inflatable cushion cell having a second cell first inflatable compartment and a second cell second inflatable compartment, wherein the second cell first inflatable compartment and the second cell second inflatable compartment are defined by at least one diagonal seal structure, and wherein the second cell first inflatable compartment and the second cell second inflatable compartment include at least one fluid opening, and wherein the first cell first inflatable compartment is in fluid communication with the second cell first inflatable compartment, and wherein the first cell second inflatable compartment is in fluid communication with the second cell second inflatable compartment.

21. A method of moving a patient in an inflatable patient support system comprising:
reducing pressure in the first inflatable compartment by removing a desired amount of fluid from the first inflatable compartment via the first fluid opening;

equalizing pressures in the first inflatable compartment and the second inflatable compartment by providing fluid communication between the first and second fluid openings;

increasing pressure in the first inflatable compartment to a high pressure by introducing fluids to the first inflatable compartment via the first fluid opening;

reducing pressure in the second inflatable compartment by removing a desired amount of fluid from the second inflatable compartment via the second fluid opening;

equalizing pressures in the first inflatable compartment and the second inflatable compartment by providing fluid communication between the first and second fluid openings;

increasing pressure in the second inflatable compartment to a high pressure by introducing fluids to the second inflatable compartment via the second fluid opening.

22. A method of claim 21 further including the steps of:

determine if oscillation period is complete;

provide a final high pressure to both the first and the second inflatable compartments by introducing fluids into the first and the second inflatable compartments via the first and second fluid opening if the oscillation period is complete.

23. An inflatable patient support system comprising:

an inflatable bed including:

a frame for securing inflatable cushion cells; and

a plurality of inflatable cushion cells located within the frame;

wherein at least one of the plurality of inflatable cushion cells includes first and second inflatable compartments defined at least in part by at least one diagonal seal structure,

and wherein each compartment includes at least one fluid opening, wherein each of the first inflatable compartments of the plurality of inflatable cushion cells are in fluid communication with one another; and wherein each of the second inflatable compartments of the plurality of inflatable cushion cells are in fluid communication with one another; and

a pressure control system including:

a user interface device for selecting desired pressures for the first inflatable compartments and the second inflatable compartments;

a pressure sensor for detecting pressures of the first inflatable compartments and the second inflatable compartments;

a fluid pump for selectively increasing or decreasing the pressures in the first inflatable compartments and the second inflatable compartments;

a valve assembly for selectively providing fluid communication to the first inflatable compartments and the second inflatable compartments; and

a controller for controlling the operation of the fluid pump and the valve assembly based on input from the user interface device and the pressure sensor.

24. The inflatable bed system of claim 23 wherein each of the plurality of inflatable cushion cells further includes: a first restriction member located away from the at least one diagonal seal structure wherein the first restriction member is formed as a seam to restrict the expansion of the first inflatable compartment; and a second restriction member located away from the at least one diagonal seal structure wherein the second restriction member is formed as a seal to restrict the expansion of the second inflatable compartment.